SUPPORT FOR THE AMENDMENT

Support for the amendment to claim 5 is found on page 6, lines 24-25 of the specification. Support for the amendment to claim 8 is found in claims 1 and 3 as originally presented and on page 6, lines 24-25 of the specification. No new matter would be added to this application by entry of this amendment.

Upon entry of the amendment Claims 1-6, 8 and 9 will remain active in this application with claims 5, 6 and 8-9 being under active consideration.

REQUEST FOR RECONSIDERATION

The claimed invention is directed to a method of treating hard surface with an antifouling detergent.

Applicants wish to thank examiner DelCotto for the helpful and courteous discussion held with their U.S. representative on April 25, 2007. At that time, applicants' U.S. representative argued the presence of improved anti-fouling properties for the composition as claimed, as compared with compositions without monomer (E). The following is intended to expand upon the discussion with the examiner.

Hard surface cleansing methods such as of bathroom sinks and toilet bowls, have not always excelled in providing antifouling effects. Problems with the degree of antifouling effect and rusting of metal surfaces fuels the quest for improved antifouling detergent compositions

The claimed invention addresses this problem by providing a hard surface treating method comprising treating a hard surface with an antifouling detergent comprising a polymer comprising 30-99 mol% of a monomer A having at least one of amino and quaternary ammonium groups, a monomer B having $-SO_2-$ groups, in an B/A ratio of 0.01 to

1. Applicants have discovered that such a composition provides for an effective antifouling treatment method. Such a method is nowhere disclosed or suggested in the cited prior art of record.

The rejections of claim 5 under 35 U.S.C. 102(b) over Harada et al. U.S. 3,920,392, Holmes-Farley et al. U.S. 6,610,283, Michel et al. U.S. 6,030,738 or Baur et al. U.S. 5,500,323 are respectfully traversed.

None of the cited prior art of record discloses or suggested the claimed method of treating a hard surface.

Harada et al. describes an inhibitor of metal corrosion which contains a polymer of a polysulfone and a cyclic quaternary amine (column 1, lines 25-45). The corrosion inhibitor is designed to inhibit the corrosion to metal surfaces caused by acid solutions used for removal of scales which stick to the inner parts of an evaporator or boiler (column 1, lines 15-20). The polysulfone compound is generally added alone to a corrosive medium (column 6,lines 34-40). A hard surface treatment with an antifouling detergent composition is nowhere disclosed or suggested.

Holmes-Farley et al. describes a method for removing bile acids from a patient (see abstact) and accordingly does not suggest a hard surface treatment.

Michel et al. describes an inter-polyelectrolyte complex which is used to control charge in electrophotographic toners and developers (see abstract) and accordingly does not suggest a hard surface treatment.

Baur et al. describes a charge control agent for electrophotographic toners and developers (see abstract) and accordingly does not suggest a hard surface treatment.

In contrast, the claimed invention is directed to a method of treating a hard surface comprising treating with an antifouling detergent composition comprising a polymer comprising 30-99 mol % of a monomer A comprising at least one of amino and quaternary

ammonium groups and a monomer B comprising $-SO_2-$ groups in an B/A ratio of from 0.01 to 1. Applicants note the claim 5 has been amended to recite a method of treatment of **a hard surface** with an antifouling detergent composition. Hard surfaces are described in applicants' specification, at page 1 as generally found in a house such as a wall, floor, kitchen instruments and devices, a bathroom, a toilet and a washstand and not the inner portions of an evaporator or boiler. The hard surface treatment, as claimed, an evaporator/boiler treatment are fundamentally different processes as hard surfaces as claimed are typical household surfaces, while a boiler/evaporator is an industrial metal containing surface which may be subject to corrosive treatments in an attempt to reduce scale in the system. As the cited references fail to disclose a hard surface treatment method or an antifouling detergent composition, the claimed method is neither anticipated nor rendered obvious from this reference. Withdrawal of the rejections under 35 U.S.C. 102(b) is respectfully requested.

The rejection of claims 5 and 8 under U.S.C. 102(b) over JP 200-096049 is respectfully traversed.

JP '049 fails to disclose or suggest a hard surface treatment method with an antifouling detergent composition.

Like Harada et al., JP '049 describes a corrosion inhibitor for acid washing of metal surfaces. As such the reference fails to describe a hard surface treatment method using an antifouling detergent composition.

In contrast, the claimed invention is directed to a method of treating a hard surface comprising treating with an antifouling detergent composition comprising a polymer comprising 30-99 mol % of a monomer A comprising at least one of amino and quaternary ammonium groups and a monomer B comprising $-SO_2-$ groups in an B/A ratio of from 0.01 to 1. Again, applicants note that claim 5 has been amended to recite a method of treatment of a hard surface with an antifouling detergent composition. As the cited reference fails to

disclose a hard surface treatment method with an antifouling detergent composition, the claimed method is neither anticipated nor rendered obvious from this reference. Withdrawal of the rejection under 35 U.S.C. 102(s) is respectfully requested.

The rejections of claims 5 and 8 under 35 U.S.C. 103 (a) over Jeschke et al. U.S. 6,251,849 or Aubay et al. U.S. 6,593,288 in view of Harada et al. and of claims 6 and 9 in further view of Pucci et al U.S. 5,872,0888 or Aubay et al.U.S. 6,703,358 are respectfully traversed.

None of the cited references disclose or suggest improved antifouling performance from using a polymer containing the combination of an $-SO_2-$ group and an amino or quaternary ammonium group, as claimed.

As evidence of the improved antifouling performance resulting from the combination of an $-SO_2-$ group and an amino or quaternary ammonium group in a polymer used in the method as claimed, the examiner's attention is directed to the data appearing on page 34, Table 2 as well as to the additional data provided in the attached declaration by Mr. Yosuke Komatsu, a named inventor of the above-identified application. The data provides evidence of an improved antifouling effect for the claimed combination of monomers as compared with a polymer without $-SO_2-$ groups.

Table 2

		Present invention products								Comparative products		Additional Examples		
		3-1	3-2	3-3	3-4	3-5	3-6	3-7	3-8	3-1	3-2	1	2	3
Concentration in flushed solution (ppm)	Polymer A	1.0	1.0	1.0	—	—	—	—	—	—	—			
	Polymer B	—	—	—	0.2	1.0	—	—	—	—	—		1. 0	2. 5
	Polymer C	—	—	—	—	—	0.5	1.0	5.0	—	—			
	Polymer D	—	—	—	—	—	—	—	—	—	—			
	Polymer E	—	—	—	—	—	—	—	—	—	1.0			
	Polymer F											2.5		
	Surfactant A	—	1.0	—	—	—	—	—	—	—	—			
	Surfactant B	—	—	—	—	1.0	—	—	—	—	—			
	Surfactant C	—	—	1.0	0.5	—	0.5	1.0	3.0	—	—	1. 0		
	Surfactant E	—	—	5.0	—	—	—	5.0	10	—	—			
	Ethyleneglycol	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
State of fouling		o	◎	◎	o	o	◎	◎	◎	×	△	◎	o	o

Polymer F diallylammonium chloride/SO2 (molar ratio 50/50) copolymer, a weight-average molecular weight of 5,000

The data illustrates the results from adding a flush through concentrate of anti-fouling detergent to a western style toilet followed by visual inspection after one week. For comparative example 3-2, a diallydimethylammonium chloride polymer, without $-SO_2-$ groups, "little fouling" was observed.

In contrast, example 3-1, and additional examples 2-3 from the Komatsu declaration, each demonstrated only "slight fouling", an improvement in anti-fouling performance as compared with the polymer without $-SO_2-$ groups.

In addition the Komatsu declaration, in additional example 1 illustrates a further diallydimethyammonium chloride polymer with $-SO_2-$ groups at a ratio of 50/50 demonstrating "no fouling" for a formulation which further comprises a surfactant.

Further demonstration of the superior antifouling effects for the claimed method using an $-SO_2-$ group containing polymer is found in Table 1 appearing on page 31 of applicants' specification. For the examiner's convenience the data from Table 1 is reproduced below:

Table 1

		Present invention products										Comparative products		
		2-1	2-2	2-3	2-4	2-5	2-6	2-7	2-8	2-9	2-10	2-1	2-2	2-3
Compounded component (mass %)	Polymer A	0.5	—	—	—	0.05	0.2	1.0	—	—	—	—	—	—
	Polymer B	—	0.5	0.5	0.5	—	—	—	—	0.5	—	—	—	—
	Polymer C	—	—	—	—	—	—	—	0.5	—	0.5	—	—	—
	Polymer D	—	—	—	—	—	—	—	—	—	—	—	0.5	—
	Polymer E	—	—	—	—	—	—	—	—	—	—	—	—	0.5
	Surfactant A	—	0.02	—	—	—	—	—	—	—	—	—	—	—
	Surfactant B	—	—	0.02	—	—	—	—	—	—	—	—	—	—
	Surfactant C	—	—	—	0.02	0.1	0.1	0.1	—	—	—	—	—	—
	Surfactant D	—	—	—	—	—	—	—	0.5	—	—	—	—	—
	Surfactant E	—	—	—	3.0	—	—	—	0.5	—	2.0	—	—	—
	Surfactant F	—	—	—	—	—	—	—	—	5.0	—	—	—	—
	Surfactant G	—	—	3.0	—	—	—	—	3.0	—	3.0	—	—	—
	Ethanol	—	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	—	—	—
	EDTA−4Na	—	—	—	—	—	—	—	5.0	—	2.0	—	—	—
	Citric acid	—	—	—	—	—	—	—	—	5.0	3.0	—	—	—
	Water	balance	balance	balance	balance	balance	balance	balance	balance	balance	balance	balance	balance	balance

Total	100	100	100	100	100	100	100	100	100	100	100	100	100
pH (20℃)	6	8	8	8	7	7	7	6	5	6	7	7	7
Easiness of detergency	4.4	4.2	4.0	4.4	4.0	4.6	4.8	4.8	4.4	4.6	1.0	3.6	3.2
Prevention of adhension of fouling	○	○	○	◎	○	◎	◎	◎	○	○	×	○	△

Each of examples 2-1 to 2-10 demonstrated little or no fouling as compared with comparative products 2-2 and 2-3, using polymers D and E, diallydimethylammonium chloride/acrylic acid and diallydimethylammonium chloride polymers respectively, neither polymer having $-SO_2-$ groups.

Accordingly, applicants have demonstrated an improved antifouling effect from using an $-SO_2-$group containing polymer in the claimed method, a result which is simply not suggested by the cited references relied upon the examiner. Since improved anti-fouling is not a suggested result of the incorporation of an $-SO_2-$group containing polymer and applicants have provided evidence of such an improvement, the claimed invention is not rendered obvious from these references and withdrawal of the rejections under 35 U.S.C. §103(a) is respectfully requested.

The rejection of claim 6 under 35 U.S.C. 112, second paragraph has been obviated by appropriate amendment.

Applicants note that claim 5 has been amended to recite "hard surface" which now provides antecedent basis for the use of the term 'hard surface" in claim 6. Applicants' amendment is not a narrowing of the scope of the claims for the purposes of patentablity as claim 6 makes clear that claim 5 is directed to hard surface treatment. Thus the claim amendment should not limit interpretation of the scope of the claims under the doctrine of equivalents.

Applicants submit that this application is now in condition for allowance and early notice of such action is earnestly solicited.

Respectfully submitted,

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IN THE UNITED STATES PATENT & TRADEMARK OFFICE

IN RE APPLICATION OF	:
SHIN AIHARA, ET AL.	: EXAMINER: DELCOTTO, GREGORY
SERIAL NO: 10/500,859	:
FILED: JULY 19, 2004	: GROUP ART UNIT: 1751
FOR: ANTIFOULING DETERGENT FOR HARD SURFACES	:

DECLARATION UNDER 37 C.F.R. §1.132

COMMISSIONER FOR PATENTS
ALEXANDRIA, VIRGINIA 22313

SIR:

Now comes Mr. Yosuke Komatsu who deposes and declares that:

1. I am a graduate of Tokyo University of Science ~~University~~ and received my master degree in the year 1998.

2. I have been employed by the Kao Corporation for the past 9 years, as a researcher in the field of Household Products.

3. I am a named inventor of the above-identified application.

4. The following experiments were conducted by me or under my direct supervision and control.

Anti-fouling detergent composition concentrates were prepared and tested

according to Example 3 of the above-identified application.

Table 2

		Additional Examples		
		1	2	3
Concentration in flushed solution (ppm)	Polymer A			
	Polymer B		1.0	2.5
	Polymer C			
	Polymer D			
	Polymer E			
	Polymer F	2.5		
	Surfactant A			
	Surfactant B			
	Surfactant C	1.0		
	Surfactant E			
	Ethyleneglycol	3.0	3.0	3.0
State of fouling		◎	○	○

Polymer F diallylammonium chloride/SO2 (molar ratio 50/50) copolymer, a weight-average molecular weight of 5,000

I declare under penalty of perjury under the laws of the United States of America that the foregoing is believed to be true and correct.

Yosuke Komatsu

July 3 2007
Date